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Euchner safety switch unicode manual

A Safety Switch with Integrated Evaluation Electronics for Series Connection Up to 20 Units The device features two semiconductor outputs (safety outputs) with internal monitoring and is categorized as Category 4 / PL e according to EN ISO 13849-1. It has a Unicode adjustment in 90° steps, generating its own clock signal on output lines OA/OB. Each actuator is coded in Unicode and can be taught-in; the switch only detects taught-in actuators. The device includes two redundantly designed safety outputs with internal monitoring suitable for Category 4 / PL e according to EN 13849-1. Both safety outputs (OA and OB) must be evaluated to achieve the stated category. The device features a Status LED, Diagnostics LED, Monitoring output, RST Reset input. A minimum distance of s = 4 mm is required between the actuator and safety switch for side approach direction. The device has plug connectors with pin designs, enable inputs, and power supply connections. It is rated for operation within the specified voltage range and has EMC protection requirements. The M12 plug connector has an 8-pin configuration, with a tightening torque of up to 1 Nm. The fixing screws have a maximum of 1 Nm, and the ready delay is set at 10 seconds. Installation can be done in any orientation, with a switching frequency capped at 1 Hz. The mounting distance is a minimum of 40 mm, and it offers shock and vibration resistance according to EN IEC 60947-5-3. It also boasts an IP67 degree of protection against solid objects and water ingress. The operating temperature ranges from -20°C to +55°C, with the housing made of plastic (PBT). This device is part of the Maximum SIL PFD Category Mission Time Monitoring of the guard position with a performance level of PL e-2.1x10^-9, and 20 years of expected lifespan. For UL approval, operation is only permitted with a UL Class 2 power supply or equivalent measures. The switch-on distance is 27 mm, while the secured switch-off distance (sar) has a maximum of 75 mm and a minimum of 20 mm for surface mounting on steel. Switching hysteresis is around 3 mm in this configuration. For non-flush mounting, assembly-specific values apply: switch-on distance is 19 mm with a secured switch-off distance of up to 45 mm and switching hysteresis between 1-3 mm. When mounted on aluminum or in a non-metallic environment, operating distances increase. Connection material details are available upon request. Downloadable documents include the operating instructions, data sheets for supplementing the operating instructions, declaration of conformity, and application examples. CAD data is also available through TraceParts. The CES-I-AR-U-C04 safety switch series is designed for monitoring movable safety guards. When used in conjunction with a separating guard and machine control, it prevents hazardous machine movements while the guard is open. Important notes: For system risk assessment, assume an MTTFd of 100 years according to EN ISO 13849-1:2008, leading to a PFHd of 2.47x10^-8/h. This switch chain can be considered as a subsystem with up to 11 connected devices in series, achieving a PL e rating. General safety instructions stress the importance of correct installation and tampering prevention to avoid personnel injuries. The device meets safety requirements: Safety category 4, PLe according to EN ISO 13849-1, redundant circuit design, internal component self-monitoring, and continuous semiconductor output monitoring. The switch-on conditions are affected by potential actuator drift out of the operating distance, which the device recognizes and indicates, allowing timely readjustment. Mounting caution advises against using safety switches as mechanical end stops, ensuring proper installation to avoid equipment damage. Electrical connection options include separate operation, series connection with Y-distributors (EUHNER M12 plug connector), series connection via wiring in the control cabinet, or operation on an AR evaluation unit. Warning: incorrect connection can lead to loss of safety function; both safety outputs must be evaluated for safety. Caution: EMC interference must be avoided by meeting EN 60204-1:2006 requirements at the installation site, particularly section 4.4.2 (EMC). The safety switch will not function properly when voltage is applied to it (e.g. the green state LED will not flash), and in such cases, the switch must be returned to the manufacturer without being opened. To ensure safe operation, follow these guidelines: * Maximum cable length: 200 meters, considering voltage drop due to cable resistance. * Maximum number of switches in a chain: 20. * Use high-quality cables with adequate cross-sections (0.34 mm² or 0.14 mm²) and avoid excessive cable lengths. Operating Instructions for the Safety Switch CES-I-AR: 1. Determine suitable cable lengths using the provided table as an example. 2. Connect the switch according to the diagram, ensuring proper connections and avoiding incorrect usage of safety outputs. 3. The RST input must be connected to 0 V when not in use to avoid errors. Important notes: * Use both safety outputs (FO1A and FO1B) to ensure safe operation. * Incorrect connection or single-channel use can lead to loss of the safety function and affect system reliability. * The CES-I-AR switch complies with PL e in accordance with EN 13849-1. 1 Read Head RST Y-distributor FI1B FI1A RST UB 0V OD FO1A FO1B UB Terminating plug FI1B 6 FI1A Safety Inputs 1 8 RST 2 UBOperating Instructions Safety Switch CES-I-AR-U-C04 Notes on operation with safe control systems Please observe the following requirements for connection to safe control systems: Use a common power supply for the control system and the connected safety switches. A pulsed power supply must not be used for UB. Tap the supply voltage directly from the power supply unit. If the supply voltage is connected to a terminal of a safe control system, this output must provide sufficient electrical current.Terminating plug 19 FI1B 6 FI1A 8 Safety Inputs 1 RST 2 UB 7 0V Y-distributor 3 FO1A 4 FO1B Safety Output OD CES 5 FI1B 6 FI1A 8 RST Safety Inputs 1 2 UB 7 0V Y-distributor 5 3 FO1A 4 FO1B CES Safety Output OD 1 IA RST 6 8 2 Safety Inputs IB UB 7 0V Y-distributor 5 OA OB LED1 UCM J 0V(UCM) CET 3 4 X2:3 X2:4 X2:5 X2:1 Safety Output OUT -X1 ET200 4 F-DO DO..M DO..Operating Instructions Safety Switch CES-I-AR-U-C04 Setup LED indicators LED STATE DIA Color State Significance illuminated Normal operation: Door closed flashing Teach-in operation or Power Up - Door open - Actuator in the limit range (refer to the status table for further signal functions) illuminated - Internal electronics fault - Fault at the inputs/outputs green red Teach-in function for actuator The actuator must be allocated to the safety switch using a teach-in function before the system is operational. It is recommended not to teach in the actuators in series connection but to teach them one by one instead. Teach-in in a series connection works analogously to separate operation in principle. All switches in the chain can be taught at the same time, provided the switch chain functions without problems.Operating Instructions Safety Switch CES-I-AR-U-C04 Functional check After installation and any fault, the safety function must be fully checked. Warning! Danger of fatal injury as a result of faults in installation and functional check. Before carrying out the functional check, ensure there are no persons in the danger area and observe valid accident prevention regulations. 1. Switch on operating voltage. The safety switch carries out a self-test.Operating Instructions Safety Switch CES-I-AR-U-C04 System status table Teach-in standby Setup X off off closed on on closed on on flashing quickly closed off on 1 x inverse open off off 1x Normal operation, door open open off off 2x Normal operation, door open, no actuator taught open off off 3x Door open, unit is ready for teach-in for another actuator (only short time after power-up) closed off off 1 Hz X off off X off off 2x Input fault (e.g. For safety switch CES-I-AR-U-C04, Parameter Value typ. max. Plastic PBT dimensions are 42 x 25 x 18 mm. The switch has a maximum plastic body temperature of 65 degrees Celsius and a minimum operating distance of -25 meters from the actuator. The connection cable is PUR with plug connector M8 or M12. Operating Instructions for Safety Switch CES-I-AR-U-C04 Published by Euchner GmbH + Co. KG, Leinfelden-Echterdingen, Germany Edition: 119563-04-05/14 Subject to technical modifications; no responsibility is accepted for the accuracy of this information. More than safety. Operating Instructions Safety Switch CES-I-AR-U-C043 About this document: This document is valid for all safety switches CES-I-AR-U-C04. It outlines the proper use and installation of these devices, which are designed to prevent dangerous machine movements while a safety guard is open. Correct Use: The Coded Electronic Safety switches series CES are safety devices that monitor movable safety guards in combination with separating safety guards and machine control. They prevent accidents by triggering a stop command if the safety guard is opened during a hazardous machine function. Before using these safety switches, it is essential to perform a risk assessment on the machine according to relevant standards, such as: - EN ISO 13849-1: Safety of machinery - Safety-related parts of control systems - EN ISO 12100: Safety of machinery - General principles for design - Risk assessment and risk reduction - IEC 62061: Safety of machinery - Functional safety of safety-related electrical, electronic, and programmable electronic control systems Correct use also involves compliance with the relevant requirements for installation and operation, including: - EN ISO 13849-1: Safety of machinery. Safety related parts of control systems. General principles for design - EN 1088: Safety of machinery. Interlocking devices associated with guards. Principles for design and selection - EN 60204-1: Safety of machinery. Electrical equipment of machines. General requirements - EN 60947-5-3: Specification for low-voltage switchgear and controlgear. Control circuit devices and switching elements. Requirements for proximity devices with defined behavior under fault conditions Important Notes: * The safety switch must be used only in conjunction with designated CES actuators from Euchner. * Connection of multiple devices in an AR switch chain is permitted only using devices intended for series connection in an AR switch chain. * A maximum of 20 safety switches are allowed to be operated in a switch chain. Subject to any technical changes; we do not accept liability for the precision of this data.